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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,505	07/07/2006	Robert Graham Burrage	MATH 1001-1	3663
James F Hann Haynes Beffel & Wolfeld P.O. Box 366 Half Moon Bay, CA 94019			EXAMINER KREINER, MICHAEL B	
			ART UNIT 3644	PAPER NUMBER
			MAIL DATE 11/12/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/585,505	BURRAGE, ROBERT GRAHAM	
	Examiner	Art Unit	
	Michael Kreiner	3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) 1-45, 51, 56, 59-61, 63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 46-48, 50, 52-55, 57, 58, 62, 64 and 65 is/are rejected.
- 7) ☒ Claim(s) 49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/23/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species III, which corresponds to claims 46-50, 52-55, 57-58, 62, and 64-65 in the reply filed on 9/12/2008 is acknowledged.

Drawings

2. The drawings are objected to because it is unclear how the rotor axis, which is co-linear with the axis of element 30b in figure 9, becomes perpendicular to 30b's axis in figure 11. Nothing in the specification supports such a possible range of motion. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Art Unit: 3644

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the shape of the underside of the aircraft from claim 64 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 62 recites the limitation "the beam" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 3644

6. Claim 53 recites the limitation "the flight position" in line 2 and "the lift position" in line 3.
3. There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 46-48, 50, 52-55, 58, 62, and 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pancotti (U.S. Pat. No. 6,367,736) in view of Sambell (U.S. Pat. No. 5,085,315).

Regarding claim 46, Pancotti teaches a tilt-rotor aircraft comprising a fuselage 2, wings 4 for sustained forward flight, and a plurality of rotors 11, each rotor being independently and sequentially tiltable between a position above the aircraft providing lift and a position providing propulsion as a propeller for forward flight (fig. 2). Pancotti fails to teach that the propellers are pusher-type propellers. Sambell teaches a tilt-rotor aircraft with pusher-type propellers. It would have been obvious to design the tilt-rotor to use pusher-type propellers since they are an obvious and well-known design alternative to puller-type propellers.

Regarding claim 47, Pancotti teaches that the rotors are inclined to the roll axis (at angle α in fig. 5).

Regarding claim 48, Pancotti teaches that the angle of inclination is variable (col. 6 l. 11-16).

Art Unit: 3644

Regarding claim 50, Pancotti fails to teach a mechanism for varying the relative phase of the rotors to permit sequential tilting. Official notice is taken that it is known in the art to vary the rotational speed of one rotor relative to another in order to impart a steering moment on the aircraft. It would have been obvious to include a mechanism for varying the relative phase of the rotors in order to offset the yaw, pitch, and roll moments caused by sequential tilting of the rotors.

Regarding claim 52, Pancotti teaches that the aircraft is operable in three flight modes, a first of which is used below a first air speed (helicopter mode, col. 5 *l.* 40-46), a second of which is used between the first airspeed and a second airspeed (col. 5 *l.* 51-60), and a third of which is used above the second airspeed (forward flight mode of fig. 4).

Regarding claim 53, Pancotti teaches a compound mode in which at least one of the rotors is in the flight position or at least one of the rotors is in the lift position (fig. 2).

Regarding claim 54, Pancotti teaches a mechanism configured to feather the rotors during transition between the lift and propulsion positions (col. 4 *l.* 42-45).

Regarding claim 55, Pancotti teaches that the rotors are carried by supporting structure mounted on the fuselage (col. 4 *l.* 39-41).

Regarding claim 58, Pancotti teaches that at least inboard portions of the wings 14 of the aircraft are movable so as to present leading edges to the airflow generated from the rotors when in lift mode (col. 5 *l.* 13-21, fig. 2).

Regarding claim 62, Pancotti teaches a beam 7 that extends to an outboard portion of the wing (col. 6 *l.* 17-20).

Art Unit: 3644

Regarding claim 64, Pancotti teaches an underside to the fuselage that is rounded in shape (fig. 2).

Regarding claim 65, Pancotti teaches a tail in figure 1. It would have been obvious to operate the tail when the aircraft is in lift mode or in transition between lift and forward flight modes in order to provide stabilization.

9. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pancotti as applied to claim 46 above, and further in view of Schmittle (U.S. Pat. No. 5,863,013). Pancotti fails to teach booms that extend from the wings of the aircraft to support the aircraft's empennage, the rotors being disposed between the booms when the aircraft is in forward flight mode. Schmittle teaches booms 134 extending from the ends of the wings, such that a tiltrotor is disposed between the wings. It would have been obvious to attach the booms of Schmittle to the aircraft of Pancotti to provide redundant control surfaces at the rear of the plane to increase the safety of the aircraft.

Allowable Subject Matter

10. Claim 49 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Quady et al. (U.S. Pat. No. 2,448,392) teach a tiltrotor aircraft with dual rotors enmeshed.

Art Unit: 3644

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kreiner whose telephone number is (571)270-5379. The examiner can normally be reached on Monday-Friday 9am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. K./

Examiner, Art Unit 3644

/Tien Dinh/

Primary Examiner, Art Unit 3644